

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In Re Continuation Application based on co-pending Application of:

|             |   |                      |
|-------------|---|----------------------|
| Applicants  | : | LeRoy Dickson et al. |
| Serial No.  | : | 09/071,512           |
| Filing Date | : | May 1, 1998          |

Honorable Commissioner of Patents  
and Trademarks  
Washington, DC 20231

**PRELIMINARY AMENDMENT**

Sir:

Prior to examination of the present Application, please amend the same as following:

**AMENDMENT OF THE SPECIFICATION**

Please amend the first paragraph on **page 1**, as follows:

**RELATED CASES**

The present Application is a Continuation of Application 09/071,512 filed May 1, 1998, which relates to: [copending] Application Serial No. 08/573,949 filed December 18, 1995; [copending] Application Serial No. 08/726,522 filed October 7, 1995; [copending] Application Serial No. 08/886,806 filed April 22, 1997, [copending] Application Serial No. 08/854,832 filed May 12, 1997; and [copending] Application Serial No. 08/949,915 filed October 14, 1997; each said Application being commonly owned by Metrologic Instruments, Inc. of Blackwood, New Jersey, and incorporated herein by reference in its entirety.

**AMENDMENT OF THE CLAIMS TO INVENTION:**

Please delete Claims 1-55, 61-71, 78-83 and 90-113.

REQUIREMENT UNDER 37 C.F.R. 1.121

As required under 37 C.F.R. 1.121, the first paragraph on **page 1**, has been amended to read as follows:

--RELATED CASES

The present Application is a Continuation of Application 09/071,512 filed May 1, 1998, which relates to: Application Serial No. 08/573,949 filed December 18, 1995; Application Serial No. 08/726,522 filed October 7, 1995; Application Serial No. 08/886,806 filed April 22, 1997, Application Serial No. 08/854,832 filed May 12, 1997; and Application Serial No. 08/949,915 filed October 14, 1997; each said Application being commonly owned by Metrologic Instruments, Inc. of Blackwood, New Jersey, and incorporated herein by reference in its entirety.--

As required under 37 C.F.R. 1.121, Applicants submit herewith the pending claims pursuant to the Amendment filed herewith.

56. A laser beam producing system comprises:

a laser beam source, such as a visible laser diode (VLD), for producing a laser beam from its junction;

a collimating lens (L1) for collimating the laser beam as it is transmitted through collimating lens L1 and through the system in a P-incident manner;

a fixed spatial-frequency diffractive optical element (DOE) denotable by D1;

a fixed spatial-frequency diffractive optical element (DOE) denotable by D2; and

a focusing lens (L2) disposed after the second DOE D2 for focusing the output laser beam to some point in space.

57. The laser beam producing system of claim 56, wherein said collimating lens (L1) is realized by an optical element selected from the group consisting of a refractive lens, a HOE, a CGH, other type of DOE, a grin lens, and one or more zone plate(s).

58. The laser beam producing system of claim 56, wherein each said DOE is realized by an optical element selected from the group consisting of a HOE, a computer-generated hologram (CGH), a surface-relief hologram, and other diffractive optical element.

59. The laser beam producing system of claim 56, wherein said focusing lens (L2) is realized by an optical element selected from the group consisting of a refractive lens, a HOE, a DOE, a grin lens, zone plate(s) or the like, disposed after said second DOE D2, for focusing the output laser beam to some point in space.

60. The laser beam producing system of claim 56, wherein the total beam-shaping factor ( $M=M_1M_2$ ) for the laser beam modifying subsystem is greater than unity (1), that is  $M_1*M_2>1$ , and thus the laser beam leaving the collimating lens (L1) is expanded in one dimension.

72. A laser beam producing system comprises:

- a laser beam source, such as a visible laser diode (VLD), for producing a laser beam from its junction;
- a collimating lens (L1) for collimating the laser beam as it is transmitted through collimating lens L1 and through the system in an S-incident manner;
- a fixed spatial-frequency diffractive optical element (DOE) denotable by D1;
- a fixed spatial-frequency diffractive optical element (DOE) denotable by D2; and
- a focusing lens (L2) disposed between DOE D1 and DOE D2 and adjustably translatable along its optical axis for focusing the output laser beam to some point in space.

73. The laser beam producing system of claim 72, wherein said collimating lens (L1) is realized by an optical element selected from the group consisting of a refractive lens, a HOE, a CGH, other type of DOE, a grin lens, and one or more zone plate(s).

74. The laser beam producing system of claim 72, wherein each said DOE is realized by an optical element selected from the group consisting of a HOE, a computer-generated hologram (CGHs), a surface-relief hologram, and other diffractive optical element.

75. The laser beam producing system of claim 72, wherein the total beam-shaping factor ( $M=M_1M_2$ ) for the laser beam modifying subsystem is less than unity (1), that is  $M1*M2<1$ , and thus the laser beam leaving the collimating lens (L1) is compressed in one dimension.

76. The laser beam producing system of claim 72, wherein each of said DOEs is realized by an optical element selected from the group consisting of a HOE, a CGH, a surface-relief hologram, and other diffractive optical element.

77. The laser beam producing system of claim 72, wherein said focusing lens (L2) is realized by an optical element selected from the group consisting of a refractive lens, holographic optical element (HOE), diffractive optical element (DOE), grin lens, and zone plate(s).

84. A laser beam producing system comprises:

- a laser beam source, such as a visible laser diode (VLD), for producing a laser beam from its junction;
- a collimating lens (L1) for collimating the laser beam as it is transmitted through collimating lens L1 and through the system in a P-incident manner;
- a fixed spatial-frequency diffractive optical element (DOE) denotable by D1;
- a fixed spatial-frequency diffractive optical element (DOE) denotable by D2; and

a focusing lens (L2) disposed between DOE D1 and DOE D2 and adjustably translatable along its optical axis during the alignment stage of the system assembly process for focusing the output laser beam to some point in space.

85. The laser beam producing system of claim 84, wherein said collimating lens (L1) is realized by an optical element selected from the group consisting of a refractive lens, a HOE, a CGH, other type of DOE, a grin lens, and one or more zone plate(s).

86. The laser beam producing system of claim 84, wherein each said DOE is realized by an optical element selected from the group consisting of a HOE, a computer-generated hologram (CGHs), a surface-relief hologram, and other diffractive optical element.

87. The laser beam producing system of claim 84, wherein each of said DOEs is realized by an optical element selected from the group consisting of a HOE, a CGH, a surface-relief hologram, and other diffractive optical element.

88. The laser beam producing system of claim 84, wherein the total beam-shaping factor ( $M=M_1M_2$ ) for the laser beam modifying subsystem is greater than unity (1), that is  $M_1*M_2>1$ , and thus the laser beam leaving the collimating lens (L1) is expanded in one dimension.

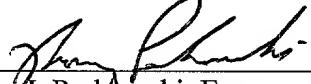
89. The laser beam producing system of claim 84, wherein said focusing lens (L2) is realized by an optical element selected from the group consisting of a refractive lens, holographic optical element (HOE), diffractive optical element (DOE), grin lens, and zone plate(s) or the like.

**REMARKS**

The present Continuation Application is filed to continue prosecution of the inventive subject matter originally disclosed in Application Serial No. 09/071,512 entitled "DOE-BASED SYSTEMS AND DEVICE FOR PRODUCING LASER BEAMS HAVING MODIFIED BEAM CHARACTERISTICS" filed May 1, 1998.

Respectfully submitted,

Dated: September 27, 2001

  
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Name: Nancy Short

Dated: September 27, 2001